

Mobile Radio Technology

The journal of mobile communications technology

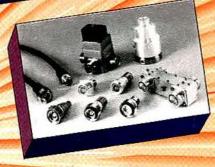


Including Buyers' Guide:

- Product Directory
- Services Directory
- Company Addresses
- Brand Names Directory
- Index to 1995 Features











As the industry's undisputed durability leaders, land mobile antennas from Antenna Specialists never lie down on the job. Their superior technology, materials and manufacturing keep them working year after year. So you can retire your worries about land mobile antenna failure.

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The 10-site radio controller



Clock/audio-level/ cross-mute display optional

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ega's Model C-5111 compact, easily rack-mounted, ten-line/fourfrequency radio control console provides instant PTT, timed mute, and other most-needed features. This toneformat console allows you to quickly select one or any combination of up to 10 remote base stations. A second speaker allows you to monitor (with individual volume controls) any combination of those 10 stations that are not already selected for TX/RX control. Instant PTT switches allow immediate response to a call on a particular "selected" or "unselected" line, without disturbing the programming of the "selected" simulcast group or line.

Standard features available on the cost-effective and versatile C-5111 console include:

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- TX ALL (simulcast) switch for selecting all lines for both transmit and receive
- RX ALL switch for monitoring all unselected lines
- Separate speakers and volume controls for "selected" (TX/ RX) and "unselected" (RXonly) audio
- GROUP SELECT switch for easy selection of TX/RX line combinations
- TIMED MUTE switch to mute "unselected" audio temporarily
- Separate volume controls for each "unselected" line
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Mobile Radio Technolo

Volume 13, Issue 12

The journal of mobile communications technology

features.

8 1996 Buyers' Guide

MRT's annual directory provides you with essential information you will want to retain for quick reference throughout the year. Products and services are listed, as well as brand names and company addresses.

10 Product Directory

More than 90 categories of equipment for the mobile radio industry are listed, as well as more than 900 suppliers. Advertisers in this issue are listed in blue.

72 Services Directory

Mobile radio services such as accounting and billing, consulting, repair, technician training, tower installation and tower space rental are listed, as well as the companies that provide them. Advertisers in this issue are shown in blue ink.

76 Company Addresses

An alphabetical listing of more than 900 suppliers and service providers appears in this section. Regional sales contacts are listed for some of the advertisers in this issue.

On the cover: MRT's 9th annual Buyers' Guide serves as the year-round reference for buying in 1996. More than 900 companies are listed representing more than 90 categories of products and services.



Sort out which company is associated with specific mobile radio industry brand names in this alphabetized listing.

115 Index to 1995 features

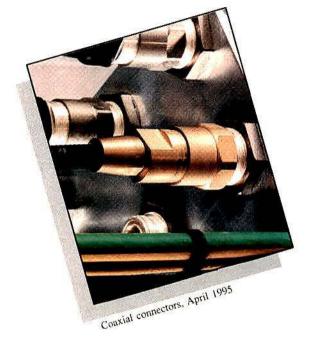
All of the 1995 articles plus two departments, Regulating Technology and Technically Speaking, are indexed by subject. Keep this as a reference to find articles printed in 1995. An alphabetized author index lists all of the features and columns that an author has written during the year.

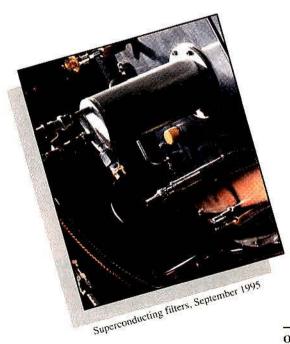
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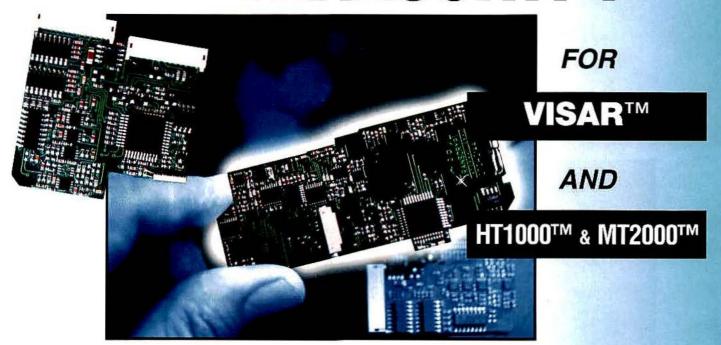
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1996 Buyers' Guide

elcome to the 9th annual directory issue of Mobile Radio Technology. We intend it to be a complete product and services source for the mobile communications industry, including mobile radio, radiopaging, mobile data and vehicle location, with additional information for the dealer and cell-site segments of cellular telephony.

Industry authorities and our editorial advisory board helped us to establish product and services categories and to compile data, and many suggestions for additional categories submitted by readers and vendors have been incorporated. Questionnaires were mailed to suppliers and service companies, asking them to list the

products and services they offer. By the way, if you represent a supplier that did not receive a questionnaire and you want one, send your company name and address to the directory issue editor, Carl Bentz, at Mobile Radio Technology, P.O. Box 12901, Overland Park, KS 66282-2901.



Category Indexpage 8

Various categories of products and services are listed on page 8. You can use this index to narrow your search for a particular kind of product or service. When you turn to the page indicated for a given category, you'll find the corresponding list of suppliers.

Product Directorypage 10

The Product Directory lists more than 90 categories of equipment and suppliers, Under each heading is a complete list of the companies that indicated that they provide that particular product. Companies that are advertisers in this issue are listed in blue, with page number references to the pages where their advertisements appear.

Services Directorypage 72

The Services Directory lists more than 10 categories of services offered by various vendors. The names of the suppliers are listed under the headings, and, as with the Product Directory, names of companies that are advertisers in this issue are listed in blue, with page number references to the pages where their advertisements appear.

Company Addressespage 76

Following the Services Directory, you will find information about the companies named in the Buyer's Guide arranged alphabetically by company name. Information includes company postal mailing addresses, E-mail addresses, telephone numbers and facsimile numbers. In addition, for many of the manufacturers that advertise in this issue, regional sales offices are listed.

Brand Names Directorypage 111

If you remember a brand name and not the product or service category or the name of the supplier, try looking up the brand name in the Brand Names Directory. Many suppliers listed their brand names on the questionnaire for inclusion in this directory.

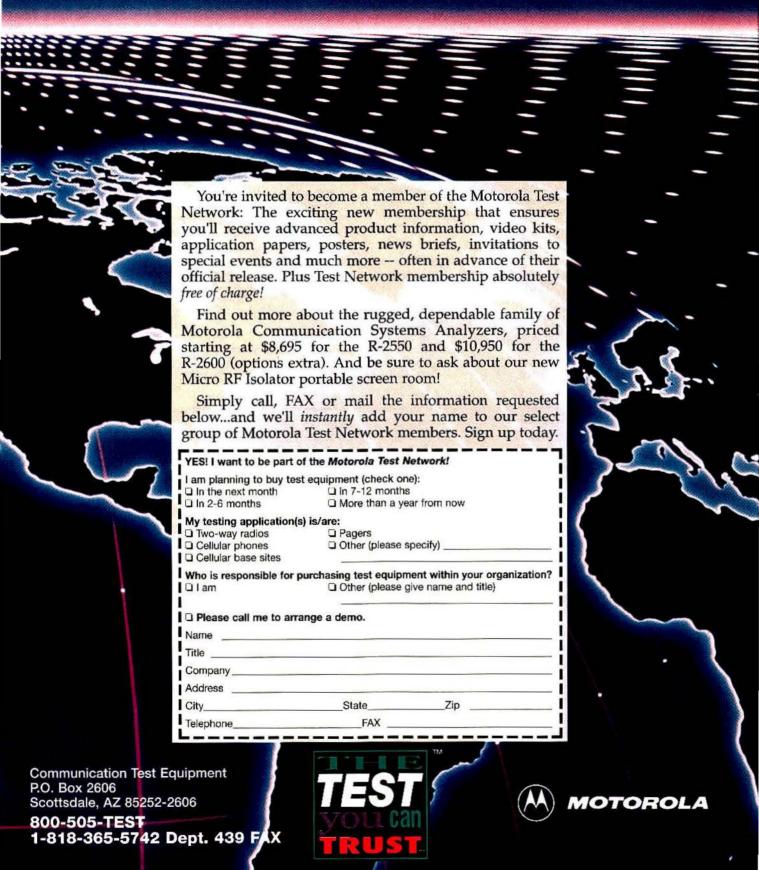
For More Informationpage 141

You can send all your requests for information from advertisers in this issue at once by using the Fast Fact Card. Circle the Fast Fact number found with each advertisement and mail the card. The card is valid until November 1996.

We welcome any suggestions you may have for making the Buyer's Guide more useful to you,

-Don Bishop

Be part of our world: Join the Motorola Test Network.



Circle (6) on Fast Fact Card

alendar

1996

January

17-19-Mobile Communications Conference, sponsored by Frost & Sullivan, Westin Galleria Hotel, Dallas. Contact: Amy Arnell, 415-961-9000

March

- 11-13-Western States Regional Conference of the International Association of Public-Safety Communications Officials, Riverpark Convention Center, Spokane, WA. Contact: Pamela Ratcliffe, 206-774-3583
- 17-20-Energy Telecommunications and Electrical Association, Dallas Convention Center, Dallas. Contact: 214-235-0655.
- 25-27-Wireless, sponsored by the Cellular Telecommunications Industry Association, Dallas. Contact: 202-785-0081,

April

- 24-26—International Wireless Communications Expo, Las Vegas Convention Center, Las Vegas. Contact: 800-828-0420.
- 29-May 1-Vehicular Technology Conference, sponsored by IEEE Vehicular Technology Society, Westin Peachtree Hotel, Atlanta. Contact: Jim Worsham, 404-804-3543.

May

- 14-17—PCIA Spring Government Conference, sponsored by the Personal Communications Industry Association, Washington Hilton, Washington, DC. Contact: Nancy Palleschi, 202-467-4770.
- 29-31—Canadian Wireless, sponsored by the Canadian Wireless Telecommunications Association, Metro Toronto Convention Center. Toronto. Contact: 613-233-4888.

June

- 16-20-UTC National Conference & Exhibition, sponsored by UTC, The Telecommunications Association, Marriott Hotel and Bartle Hall Convention and Civic Center, Kansas City, MO. Contact: 202-872-0030
- 24-27-Supercomm, sponsored by USTA and TIA, Dallas Convention Center, Dallas. Contact: 202-326-7300.

July

11-13-Communications Expo/Show of the Americas, Miami, FL. Contact: 305-229-9992.

August

11-15-International Association of Public-Safety Communications Officials (APCO) National Conference, San Antonio, TX. Contact: 800-949-2726.

September

19-21—Personal Communications Showcase, sponsored by the Personal Communications Industry Association, Moscone Convention Center, San Francisco. Contact: 800-326-8638.

October

30-Nov. 1-WirelessWorld Conference and Exposition, sponsored by Cellular Business and Mobile Radio Technology magazines, Orange County Convention/Civic Center, Orlando, FL. Contact: Susan Link, 913-967-1969.

November

15-Radio Club of America, Communications Symposium, 87th Anniversary Dinner and Awards Presentation, New York Athletic Club, New York, Contact: Ron Formella, 201-652-6811.



Mobile Radio The journal of mobile communications technology

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granted a photocopying license by CCC, a separate system of payment has been arranged. Prior to photocopying items for educational use, please contact CCC at 508-750-8400. Organizations or individuals with large quantity photocopy or reprint requirements should contact Chris Lotesto, 312-435-2359.

BACK ISSUES: Copies of most issues printed within the past two years are available; older issues are not. Call customer service at 800-441-

ARTICLE PHOTOCOPIES: Photocopies of individual articles printed since January 1983 may be ordered from UMI Information Store at 800-248-

MICROFILM COPIES: Copies of issues by calendar year are available on microfilm for 1992, 1993 and 1994. Older issues are scheduled for microfilming later. Write UMI at P.O. Box 1346, Ann Arbor, MI 48106-1346, or call 313-761-4700 or 800-521-0600, serials customer service, ext. 2895.

₩BPA ABP

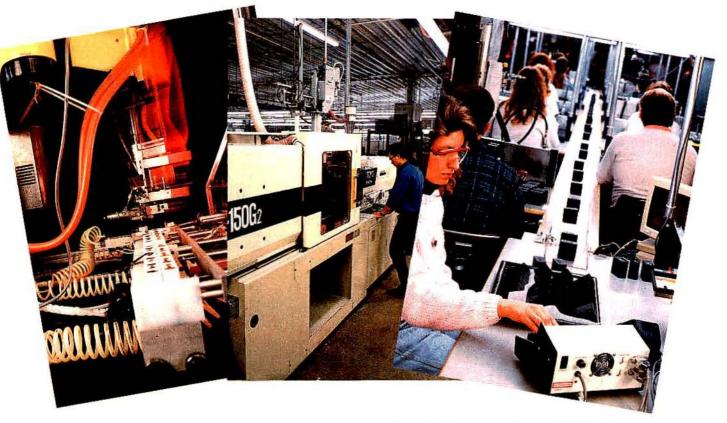
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device (SMD) technology. Additionally, many Centurion batteries are available in nickel-cadmium, alkaline, nickel metal hydride or lithium ion.

Regarding custom battery assemblies, unleash Centurion's in-house capabilities by simply providing a sketch, drawing, sample pack **or** your Pro-E or Unigraphics

solid modeling drawings on any medium—disk, modem or tape.

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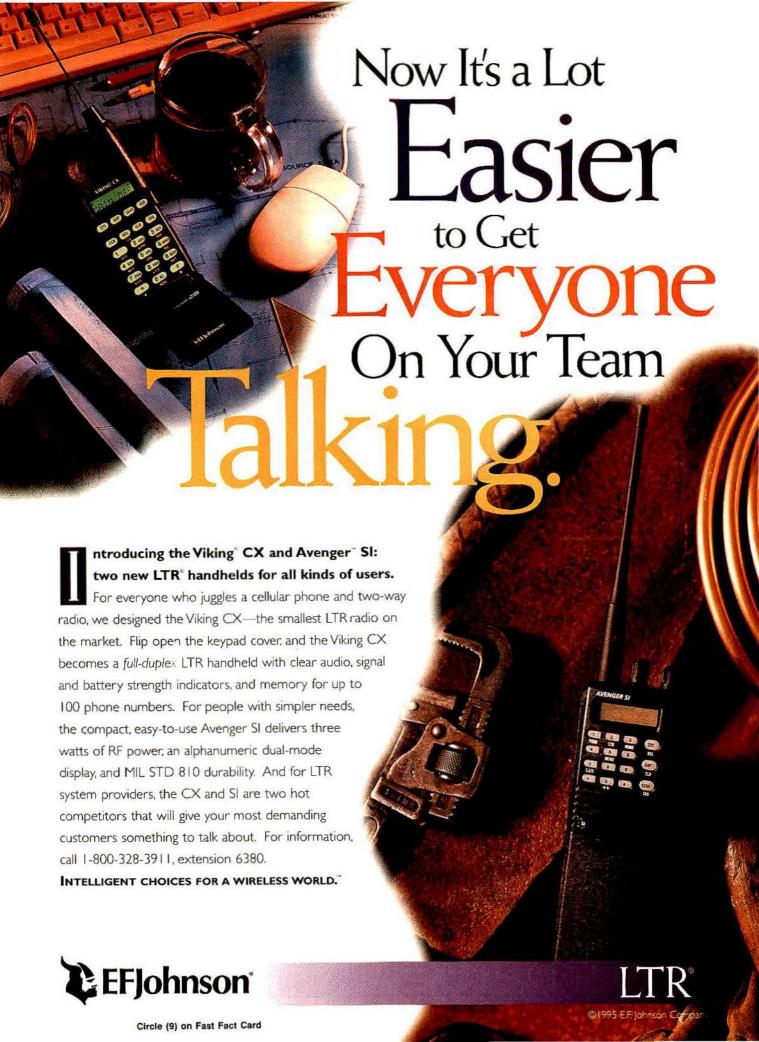
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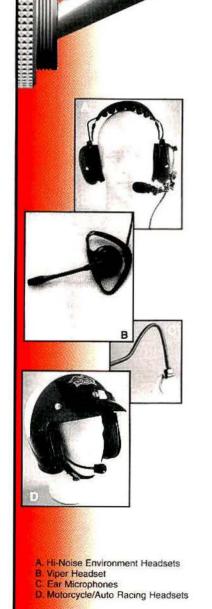


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A low cost interconnect that can be used straight simplex or through any conventional or trunked repeater system. (Please see export note below).

When comparing, please note that features such as Electronic Voice Delay, 90 memory speed dialer, built in keypad, and programming display are standard.



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A low cost interconnect for full or half duplex operation. Half duplex privacy mode is selectable. Has a built-in repeater maker. Speed dial capacity now increased to 90 numbers.



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Options: 1/2 second Electronic Voice Delay, CTCSS operation, Dial click detection, Aux. relay, DTMF, CTCSS, 2 Tone or 5/6 Tone signalling.



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An interconnect for full or half duplex operation. Half duplex privacy mode is selectable. Also has a built-in repeater maker.

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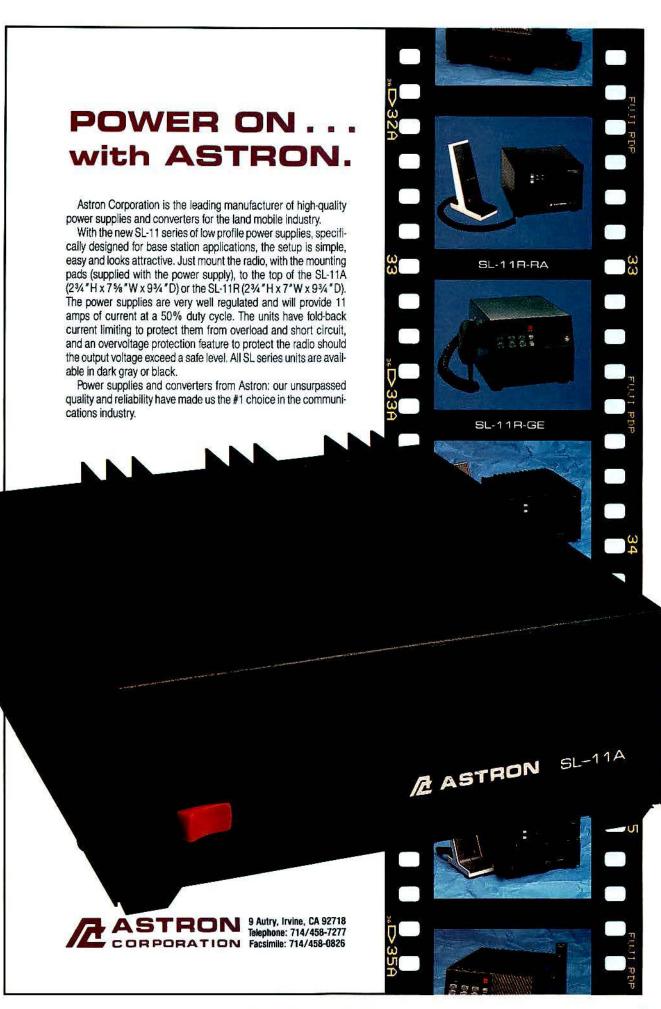




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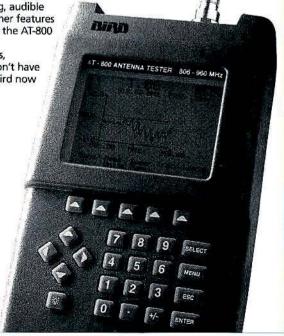
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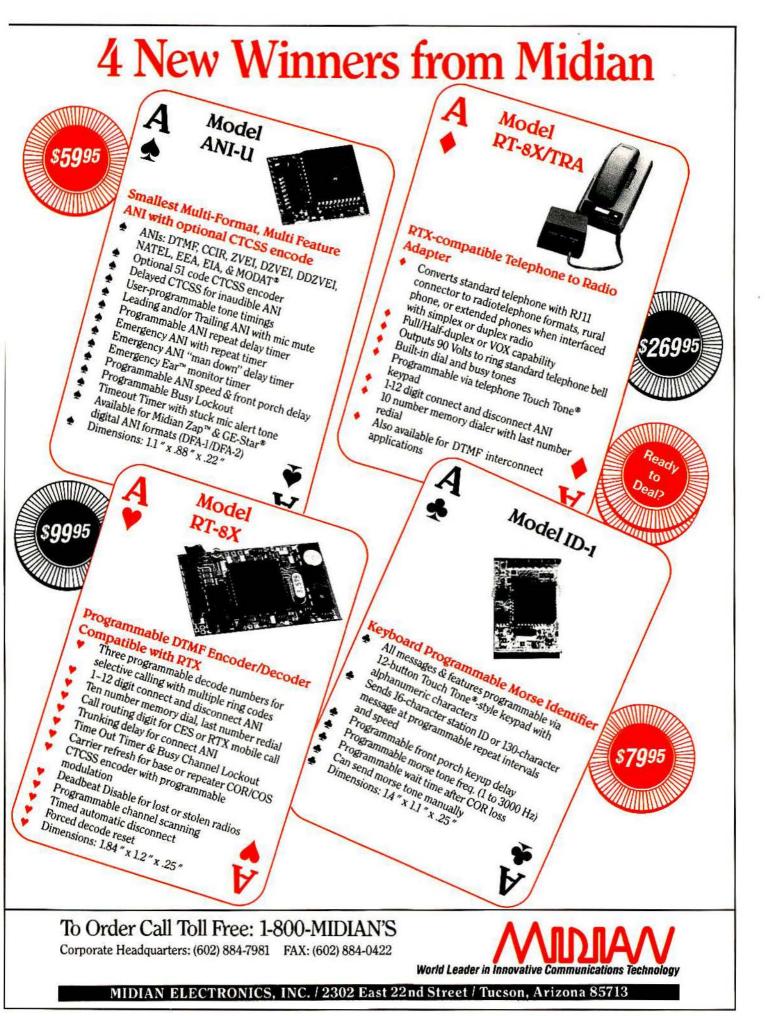
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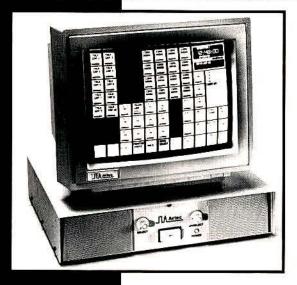
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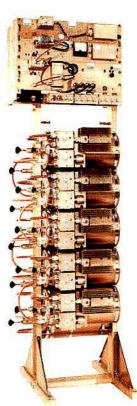
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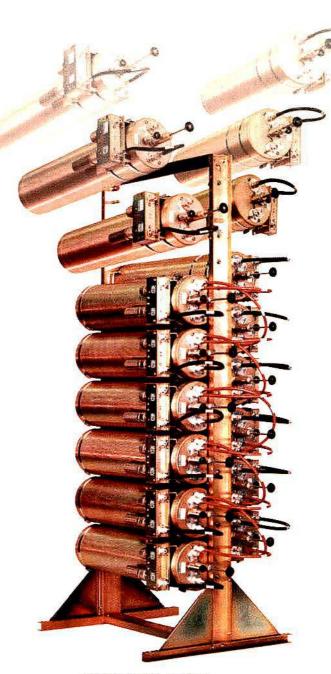
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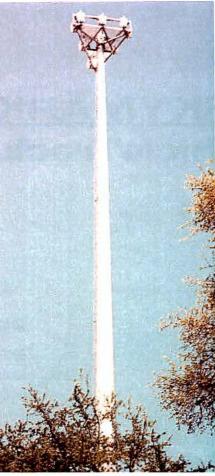
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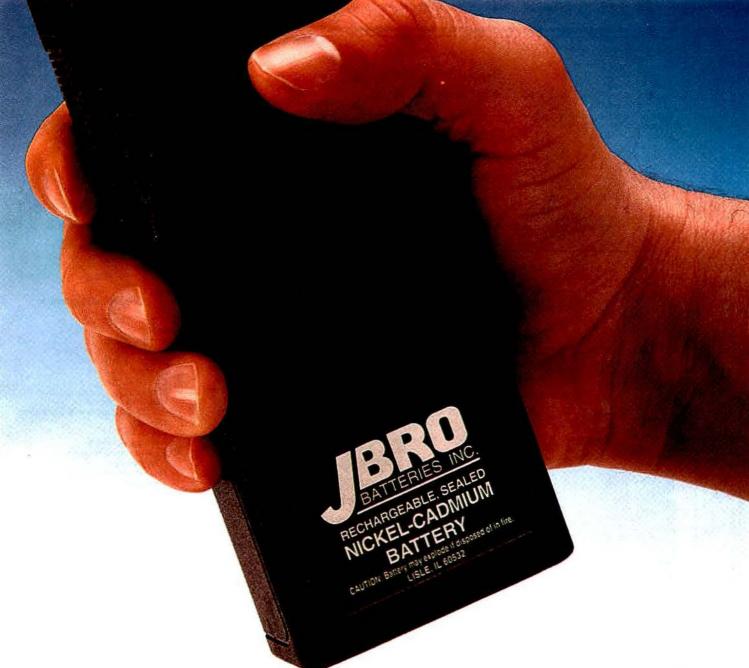
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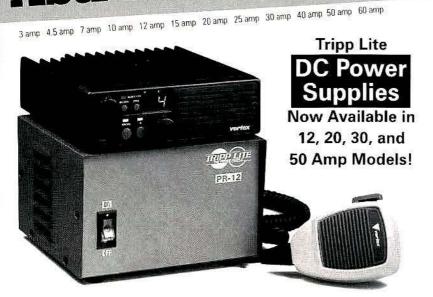
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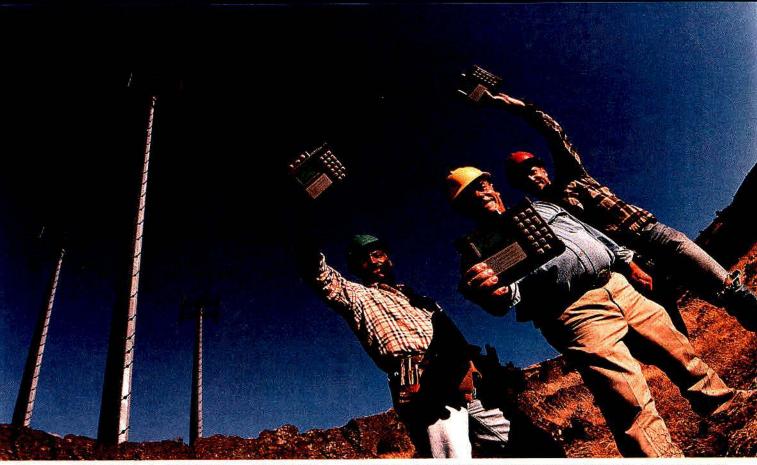


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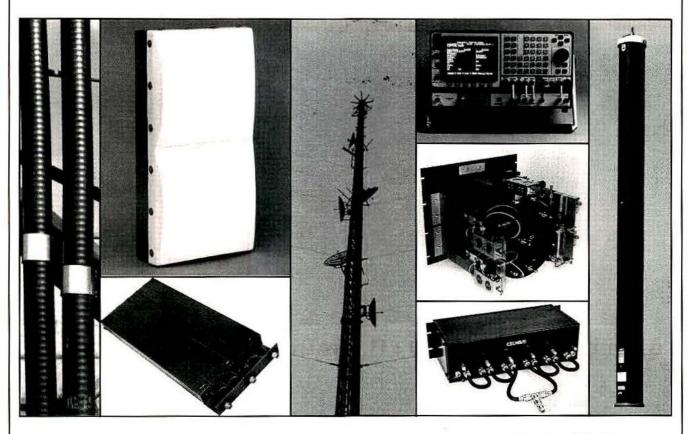
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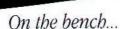
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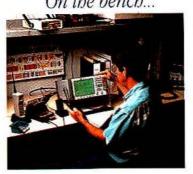
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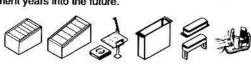
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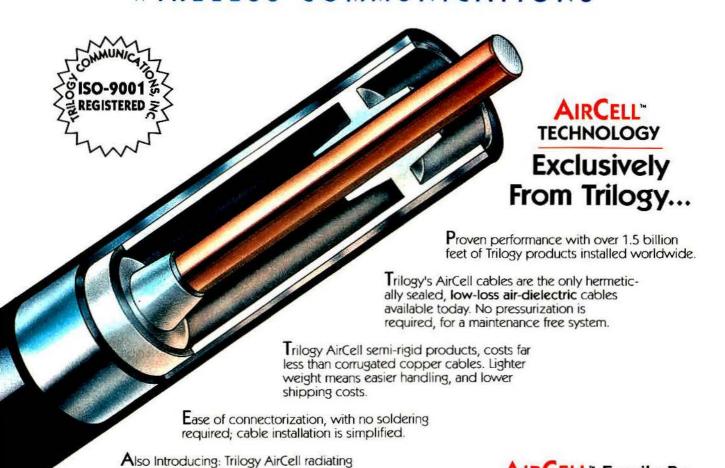
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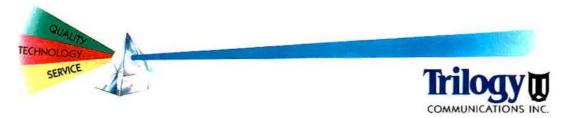
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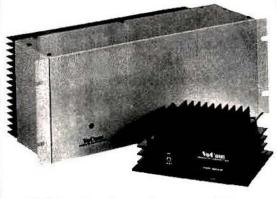
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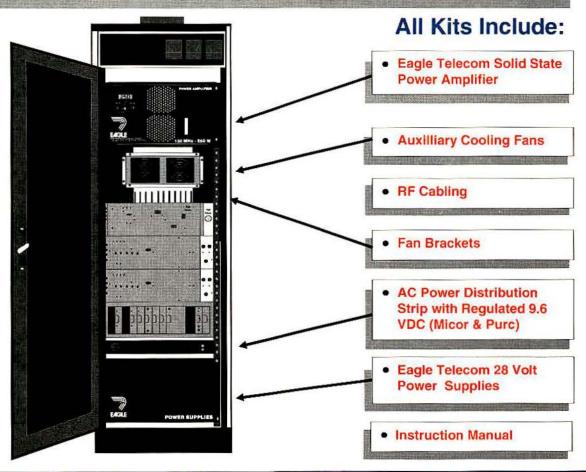
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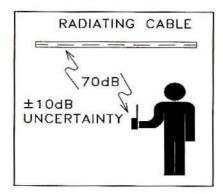
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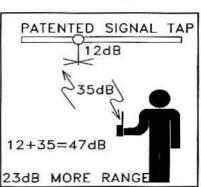
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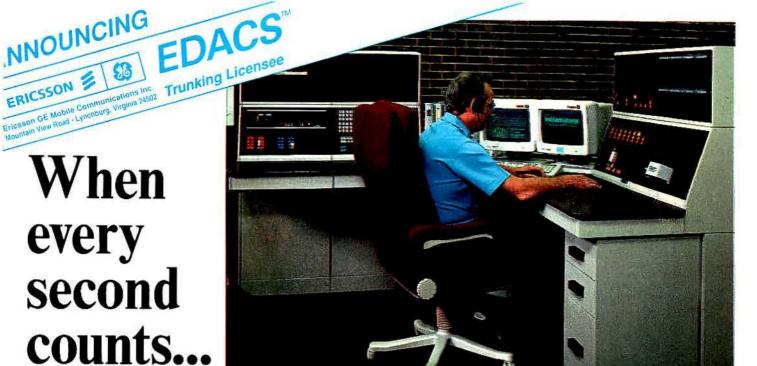


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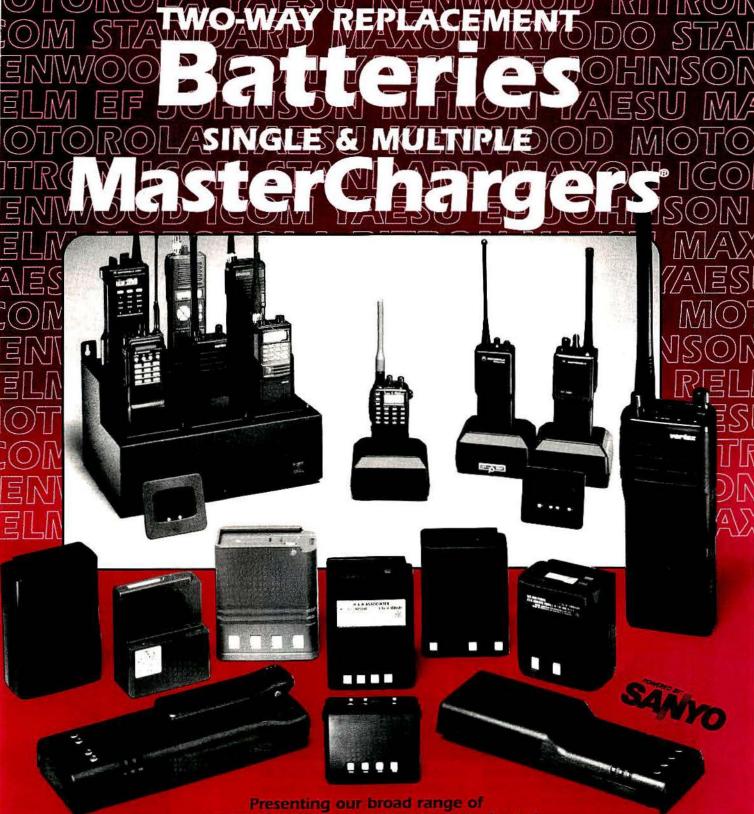
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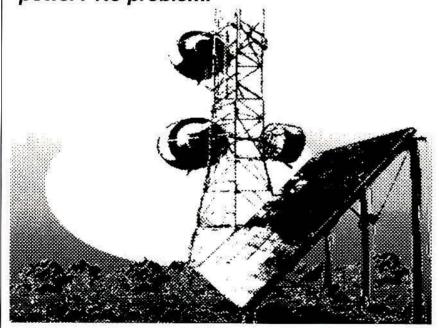
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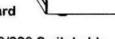
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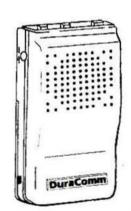
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MM Newman/Antex Div
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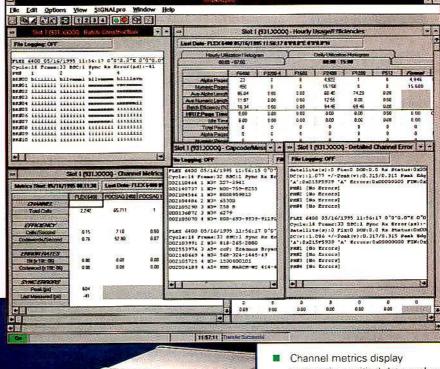
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SICINAL PRO Your Window to Advanced Messaging Your Window to Advanced Messaging Your Window to Advanced Messaging

SIGNALpro is part of a system for the real time reception, demodulation, decoding, display, and file logging of radio paging messages and channel metrics. The system consists of a paging channel receiver, a SIGNALpro data analyzer, and a Windows capable personal computer (PC). RF signal reception and demodulation are performed by a local receiver such as a modified FLEX pager, a scanner (modified), or a communications test set. SIGNALpro accepts the demodulated audio from the receiver and performs the paging format decoding and detailed signal analysis. SIGNALpro and the PC transform the paging data into meaningful channel information. Display windows can be opened that provide channel error detail, batch construction details, call and usage summaries, as well as each capcode and message. SIGNALpro provides extensive signal and data analysis of the received paging signal. Data and signal analysis compliment your existing RF analysis tools (communications test set, RF signal strength meter, etc.) to provide you with a comprehensive set of

test and measurement products. SIGNALpro can be used to better manage and troubleshoot existing channels, and has proven to be an invaluable tool when adding FLEX to a new or existing channel.

- Monitors up to 4 paging channels
- PC based Graphical User Interface (GUI) operates in conjunction with Windows 3.1 (or higher) providing a point-n-click menu interface for manipulating display windows, file storage, printing, and parameter changes
- Detailed channel error display provides real time bit error analysis and determination of the peak edge misalignment
- Synchronous receive time information provides error analysis of FLEX transmission boundaries

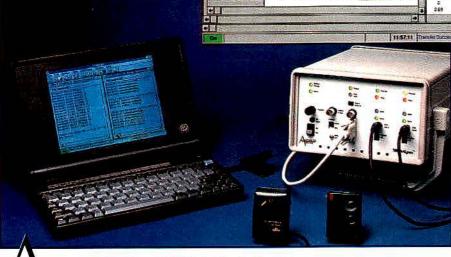


Channel metrics display summarizes critical data such as bit error rate, codeword error rate, and channel call rates for each format and data rate

Hourly Usage/Efficiencies display provides detailed information about average message length, batch efficiencies per format and data rate, channel utilization, and more

Internal GPS receiver option

 Capcode/Message summary can be filtered by capcode(s) and by words, message fragments, character combinations, etc.



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Status Alarm Systems

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TCXOs - See Channel Elements

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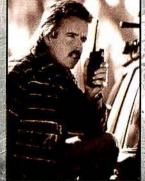
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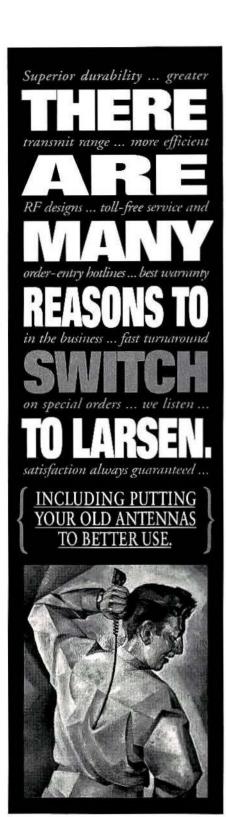
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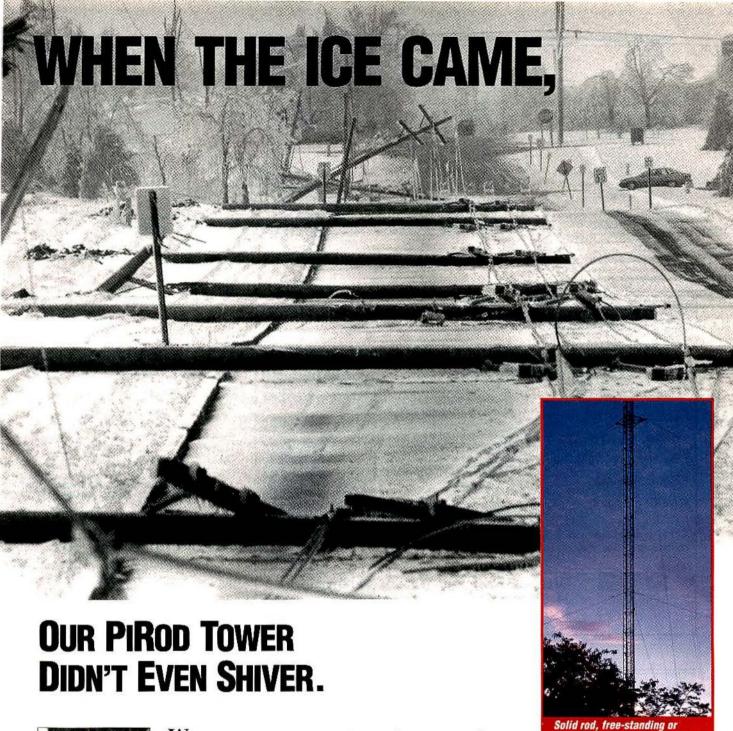
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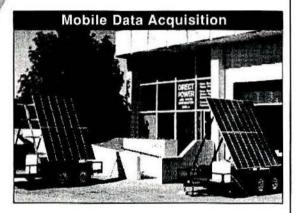
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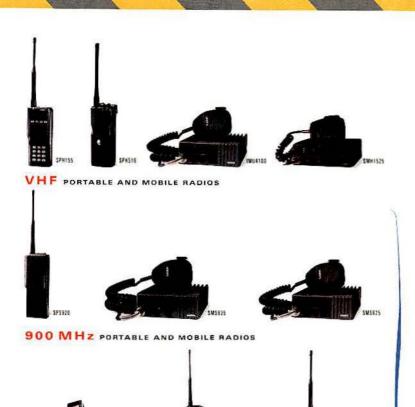
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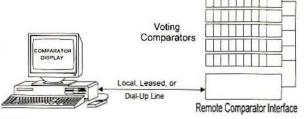


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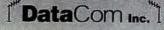
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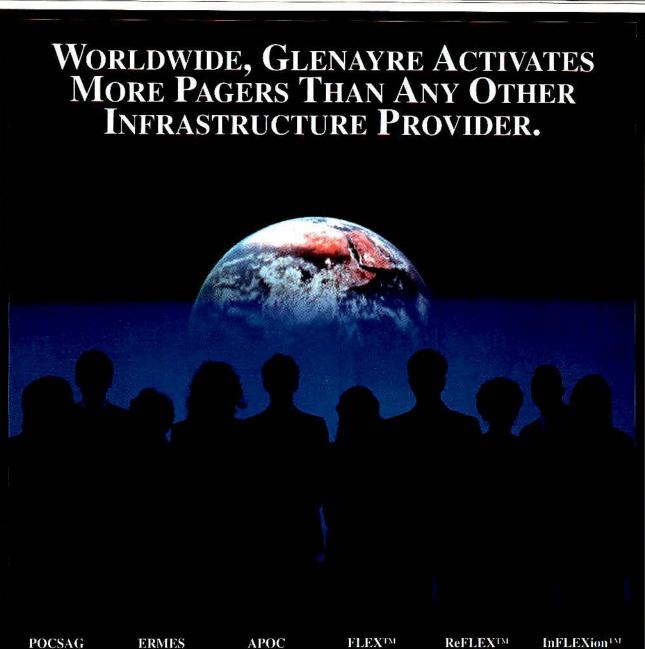


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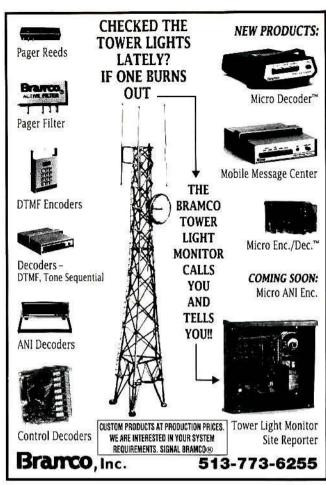


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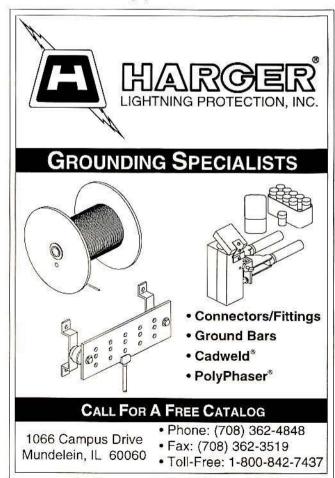
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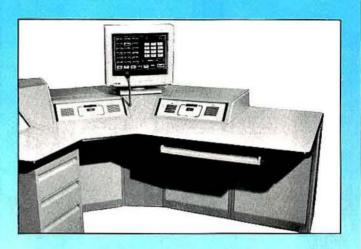
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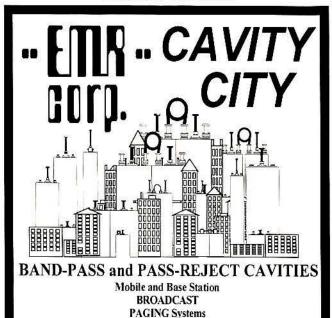
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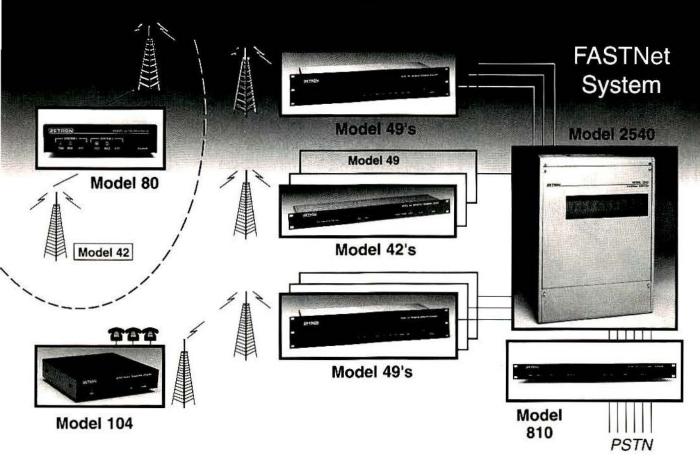
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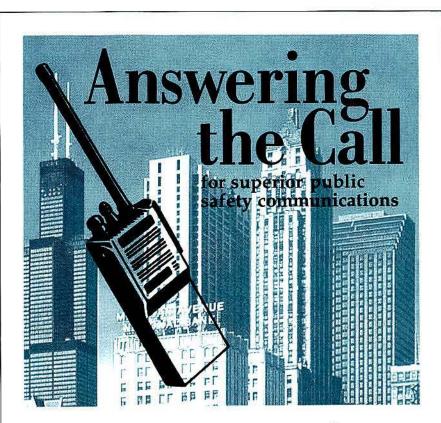
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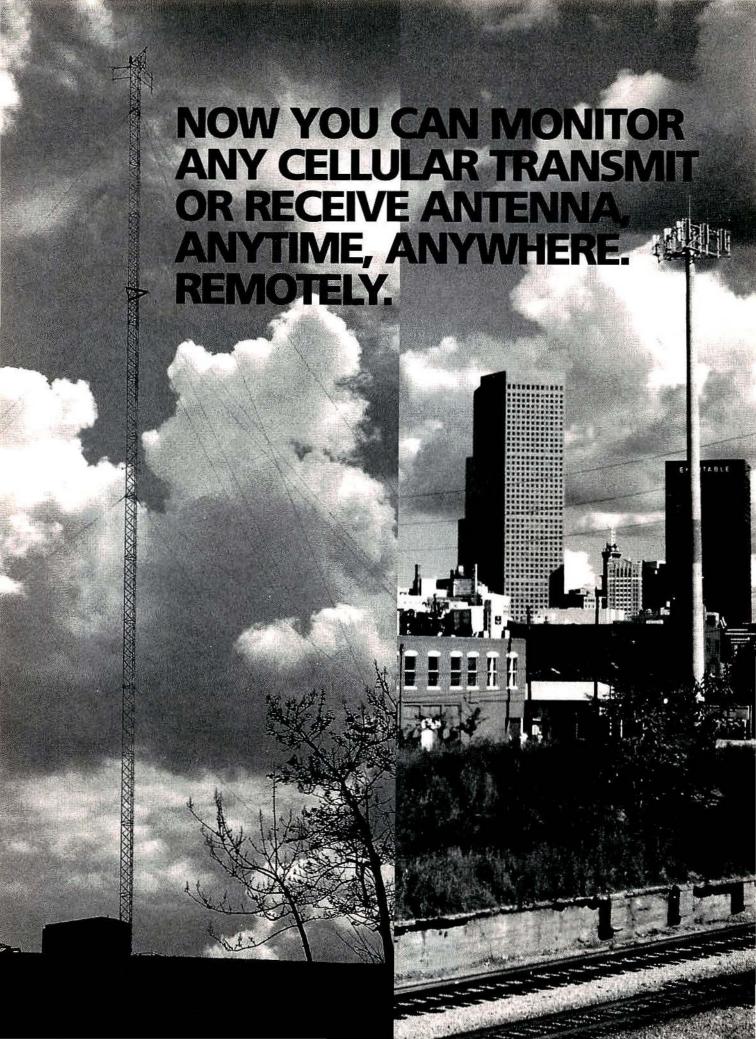
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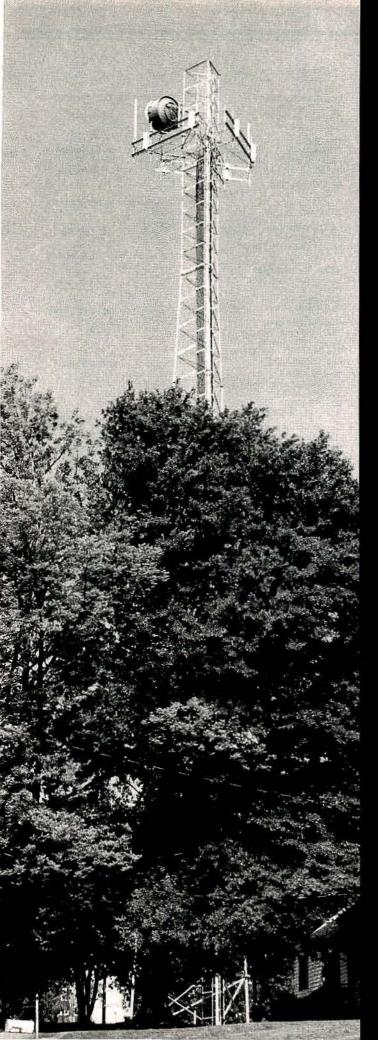


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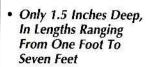
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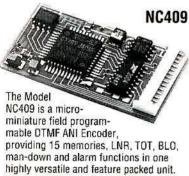
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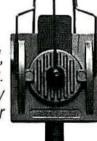
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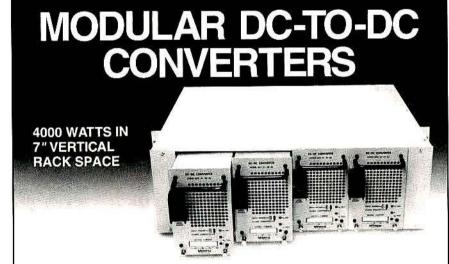
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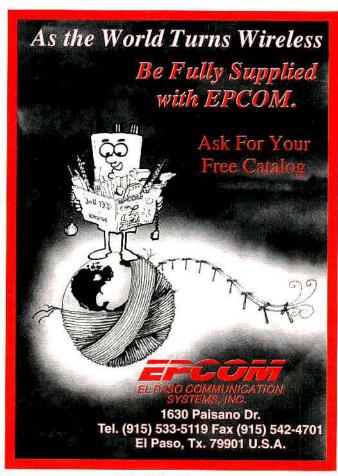
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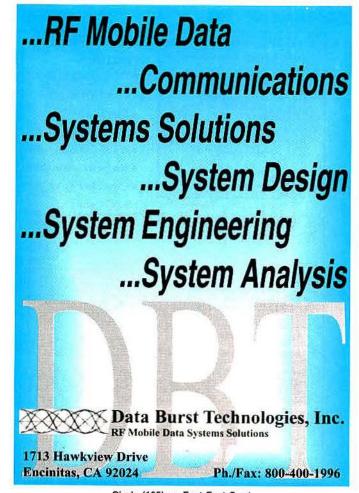
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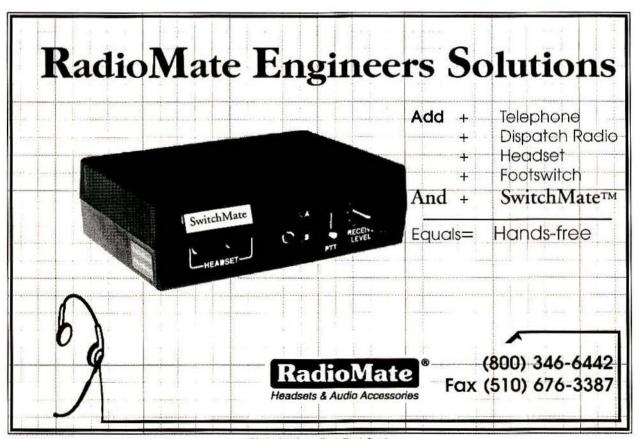
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T COM - Times Microwave Systems
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TAP TERRAIN ANALYSIS PACKAGE SoftWright
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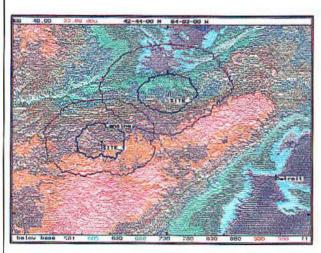
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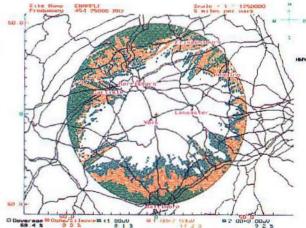
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Letters from readers

Coaxial cable installation codes:

It absolutely amazes me when I see articles in Mobile Radio Technology in which writers state that there are no code requirements for installing coaxial cable in buildings. This is dangerous and stupid thinking, as all wiring in buildings, with or without power running through it, is subject to the National Electrical Code (NEC) and other codes such as Building Officials Code Administration (BOCA).

Any contractor installing coaxial wiring in buildings is supposed to have this installation approved by an electrical inspection agency. If not, the installing firm is leaving itself wide open to legal action should there be a fire or accident. This goes double when coax is installed in air plenum (duct) ceilings because all wiring methods must either use plenum smoke-resistant cabling or be encased in metal to prevent toxic chemicals that may be released during fires from spreading.

Just because coax has no standard electrical current running through it does not exempt it from codes. In particular, the installer is to follow code sections Article 810 Radio and Television Equipment along with sections 725, 770 and others.

I know this because I am an electrician as well as a radio system installer. My installations are inspected on a regular basis when I install repeater systems on tops of buildings. Those interested in having their installations comply with NEC should contact the National Fire Protection Association, Battery March Park, Quincy, MA, 617-328-9290, for more information.

> Nick Markowitz Owner and Chief Technician Markowitz Electric Protection Verona, PA

Fast Fact Card comments:

The two toughest problems facing me on the job are:

Heavy intermod at commercial repeater sites.

· Finding ways to save on new equipment.

Richard Sandel President Robert Reed Associates Larchmont, NY

The toughest problem facing me on the job is government red tape.

John Sippel Sippel Hardware & Communication Universal City, TX

The toughest problem facing me on the job is rising repair costs.

> Richard Willbanks Vice President/SLS Law Enforcement Sales Kennesaw, GA

The toughest problem facing me on the job is finding a radio that is easy enough for customers to use and sophisticated enough to provide a solution for their needs.

> Aaron Clark Don Clarks Radio Blackfoot, ID



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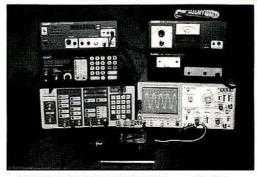
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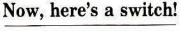
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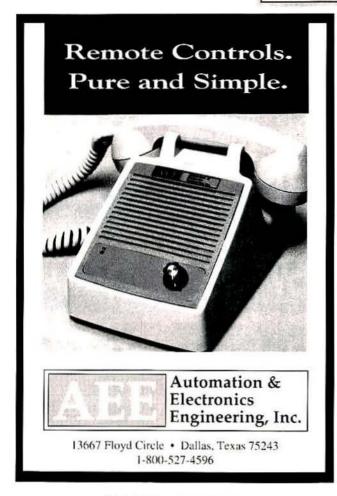
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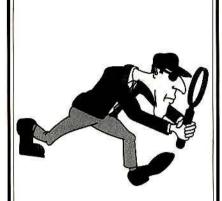
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